

HOME INSULATION

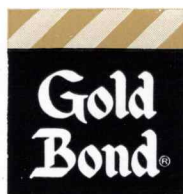
what it does and
how to install it . . .



ROCK WOOL

A "HOW-TO-DO-IT" BOOKLET
FOR HOMEOWNERS

How



ROCK WOOL INSULATION

Adds Comfort and Savings to Your Home

Just a generation ago, few homes were insulated. Today, an uninsulated house is considered obsolete. And this is because the public's experience with home insulation has been so impressive in terms of comfort and economy.

PROTECTION IN WINTER

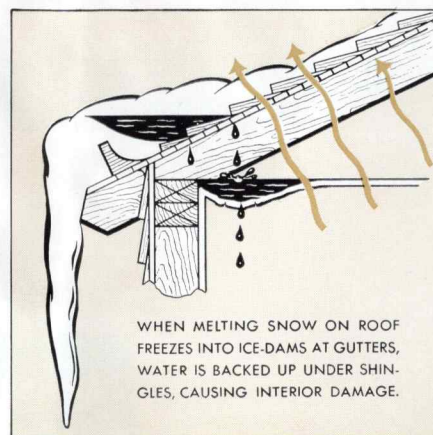
Because more people live in those parts of the country that have cold winter weather, much of the interest in insulation has centered, until recently, in the comfort and savings it gives in winter. Heat rises . . . and in many uninsulated houses a good part of it goes right on up through the roof. Evidence of this can be seen after a light snowfall. The snow remains on the roof of the insulated house, but is melted away on the uninsulated house by the heat escaping through the roof. If the snowfall is heavy, the melted snow may freeze and form an ice-dam when it reaches the unheated eaves. The gutters and downspouts then become blocked. As more and more water flows down from the melting snow, it backs up under the shingles, begins to drip inside, and damages walls and ceilings, requiring expensive redecorating.

But insulation's great winter advantage is the added comfort it brings. Heat is kept inside the house. Instead of unevenly heated rooms that cause drafts along floors and down stairwells, room-to-room temperatures are more uniform; comfort is increased throughout the house.

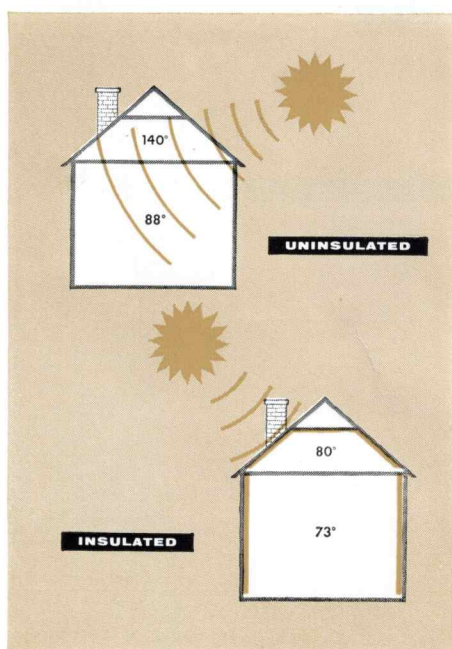
With the heat kept inside, less fuel is needed. The more severe the winter weather, the sooner Gold Bond Rock Wool Insulation pays back its cost. These savings can be as high as 25% of your fuel bills, depending on the design of the house and other factors, and they continue every year . . . long after they've paid for the insulation.



Escaping heat melts snow on uninsulated house, left. Snow remains on insulated house, right, because heat is kept inside.



WHEN MELTING SNOW ON ROOF FREEZES INTO ICE-DAMS AT GUTTERS, WATER IS BACKED UP UNDER SHINGLES, CAUSING INTERIOR DAMAGE.



COOLER HOMES IN SUMMER

On hot summer days, attic heat may reach 140°! It forces its way down into your living quarters. You swelter until long after nightfall. But the bright aluminum surface of Gold Bond Twinsulation blankets, for example, reflects back about 80% of this radiated summer heat, and the rock wool center also helps to keep your rooms as much as 15° cooler!

This means greatly lowered costs for air conditioning, both in the smaller plant needed and in its operation . . . one reason for the great new interest in Gold Bond insulation's summer benefits.

A PERMANENT FIRE BARRIER

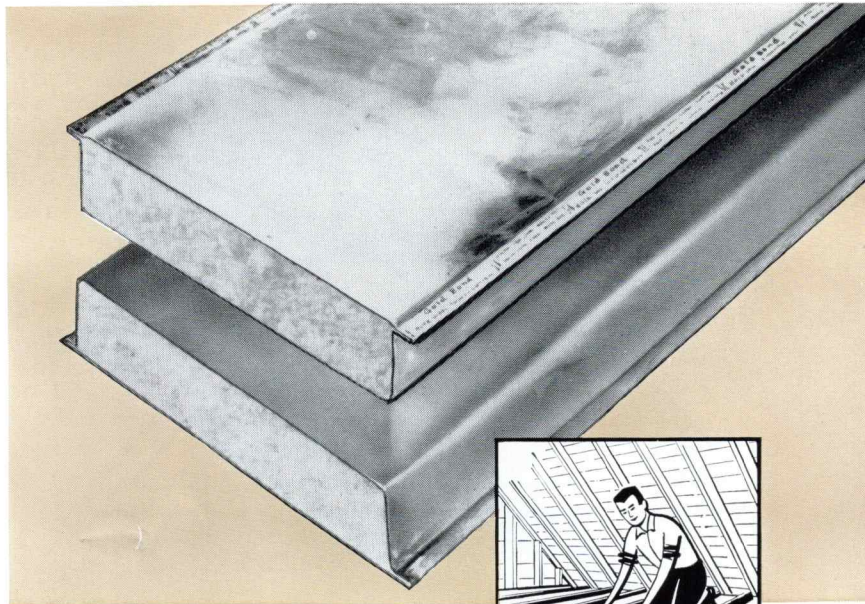
Gold Bond Rock Wool adds fire-protection to your home. It is actually molten rock that has been fiberized and felted into blankets to hold billions of insulating air-cells. It cannot burn but forms a barrier to flames wherever installed. It will not deteriorate with age. You won't find a safer, sounder, more satisfying investment than Gold Bond Rock Wool Insulation whether you look at it in terms of comfort or dollars or both!

Gold Bond® ROCK WOOL BLANKETS

for every type of attic

TWINSULATION—is for those who want the most for their insulation dollar. It combines fire-safe rock wool with a heat-reflective surface on both sides thus providing a *double* insulating action that is especially effective against radiated summer heat. Aluminum foil makes an ideal vapor barrier on one side; and the “breather cover” on the other side helps to prevent condensation. The entire covering is resistant to flame spread. Triple thick nailing flange on long edges simplifies fastening in position where this may be necessary. The rock wool is sealed to *both* sides of the covering. This makes a stiffer blanket that is much easier to handle and install . . . and the wool does not slip or sag.

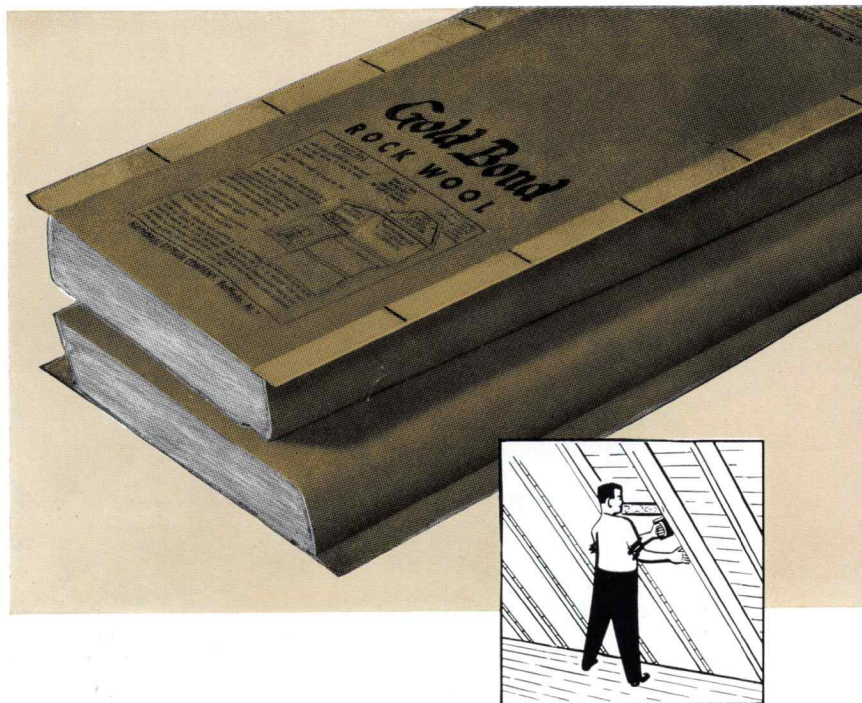
Available in Full-Thick and Semi-Thick; in 15, 19 and 23 inch widths to fit standard spacing of studs, joists and rafters. Lengths: 4 and 8 feet.



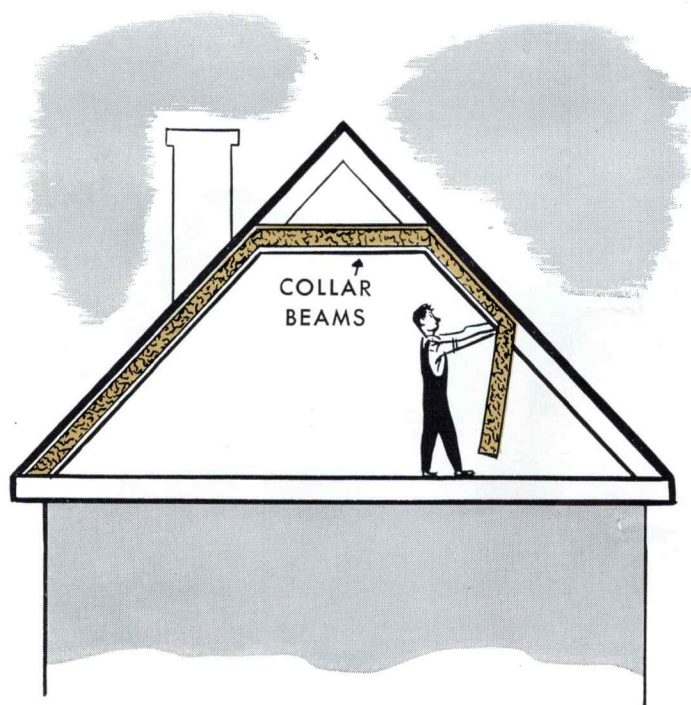
REGULAR SPUN ROCK WOOL BLANKETS

have all the insulating properties of the deluxe Twinsulation Blankets except the heat-reflective surface. They have a vapor barrier on one side and “breather cover” on the other; and the rock wool is adhered to both sides of the covering for added stiffness and stability. Nailing flanges are also provided on the long edges to facilitate fastening where needed.

Available in Full-, Semi- and Mat-Thick and in the standard 15, 19 and 23 inch widths. Fifteen-inch widths of Full- and Semi-Thick are supplied in 2, 4 and 8 foot lengths; 19 and 23-inch widths of these thicknesses are made in 4 and 8 foot lengths. Mat-Thick Blankets are furnished only in 8 foot lengths.



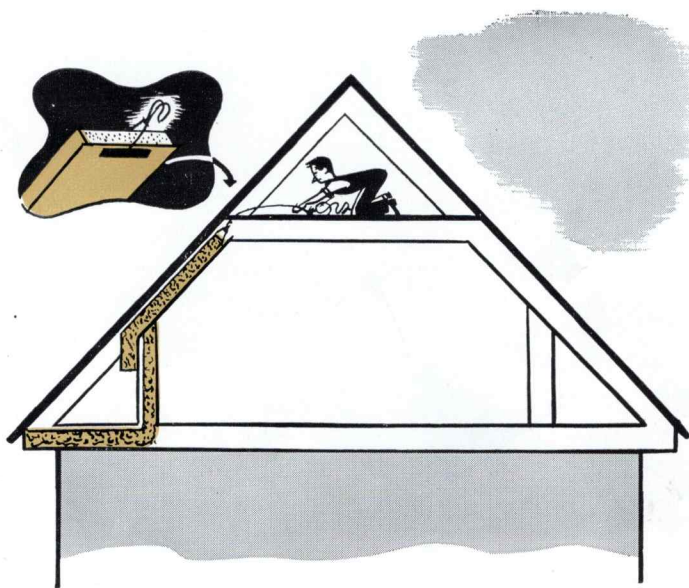
It's Easy To Insulate Your Attic . . .



FLOORED ATTICS

WITH UNFINISHED ROOM

If attic is floored but unfinished, collar beams should be added when they are not already present as shown in the illustration at the left. They should be placed at least 24 inches below the roof ridge and, if the attic is to be used for living space, at least 7½ feet above the attic floor to allow sufficient headroom. Provide vents *above* the line of insulation as directed on Page 7. Place Gold Bond Rock Wool Blankets, as pictured at the left. Seat blanket ends snugly in eaves but do not block any eave vents. Nail or staple blanket flange to side of roof rafters and collar beams with edge of flange flush with lower edge of the beam or rafter. For permanent support of blankets, nail Gold Bond Gypsum Wallboard or Gold Bond Insulation Board to the under side of the rafters and collar beams.

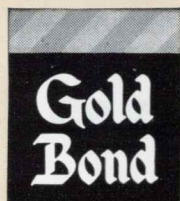


FLOORED ATTICS

WITH FINISHED ROOM

If attic has *finished* room and is unfloored between eave and room wall, install insulation as pictured at left. If space between eave and room wall is floored, place insulation between roof rafters from eave, straight up to and across top of ceiling as indicated for floored, unfinished attic above. Vapor barrier side of blanket must always face interior of building. Close-up shows how skirt-hanger may be clamped to blanket to draw insulation up into ceiling slope. Where blankets are unsupported in sidewall studs, or in rafter slopes, cover them with Gold Bond Gypsum Wallboard or Gold Bond Insulation Board, nailed to studs or rafters.

. With



ROCK WOOL

UNFLOORED ATTICS

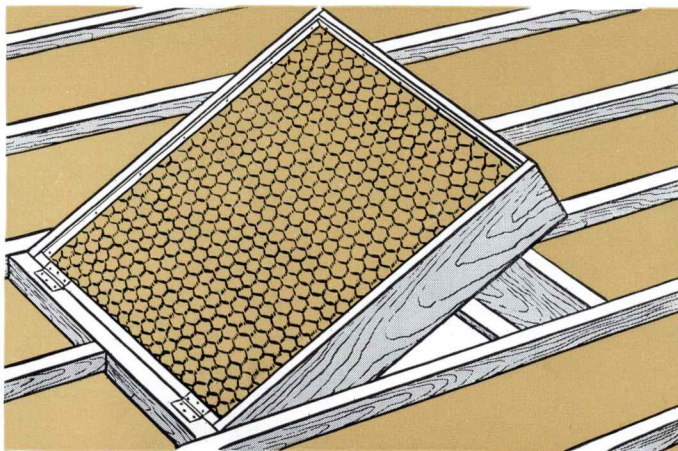
Where floor joists are of standard 16, 20 or 24 inch spacing from center to center, place insulation blankets of corresponding width between the joists with the vapor barrier face-down. If joists are not of standard spacing, use the 19" wide blankets for joists spaced 17" to 20" and the 23" blankets for joists spaced 21" to 24" on centers. The slight compression of the resilient blankets will not affect their insulating efficiency. Be sure blanket ends are butted snugly into the eaves but do not block any air vents in the eaves. Butt all insulation sections closely together and cut and shape them as necessary to fit tightly around all obstructions. Full-Thick Twinsulation Blankets are recommended for attic application because of the added protection their heat-reflective covering gives against summer heat.



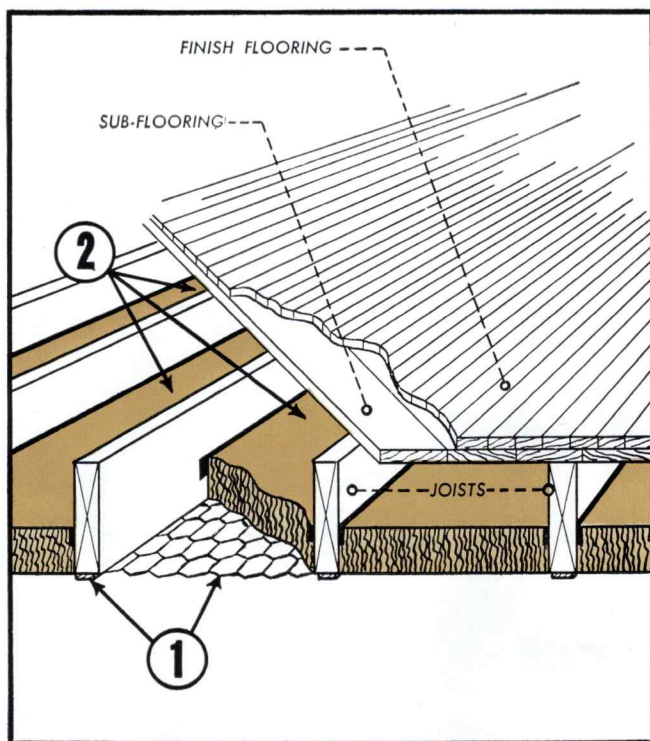
ATTIC ACCESS AREAS

If access to the attic is by means of a trap door, insulate the attic side of the trap door with Gold Bond Rock Wool Blankets and weatherstrip the edges of the opening.

Where attic insulation is confined to the attic *floor* area, the attic stairwell should be lined with 1/2" Gold Bond Insulation Board. The stair side of the stairwell door should be covered with a snugly fitted panel of the same material and the door should be weatherstripped.



FLOORS OVER UNHEATED AREAS



1. Nail or staple strips of galvanized wire mesh or other weather-resisting material taut across under side of joists. Space strips closely enough to prevent sagging of insulation and place extra strips where necessary to support ends of butted sections.

If wire mesh is used, it can be made more secure by nailing regular $\frac{1}{2}$ " x $1\frac{1}{2}$ " wood lath over it at the points of fastening on the under side of the floor joists as indicated on the diagram at left.

2. As soon as enough supports are in place to receive a length of insulation blanket, lay the blanket on the supports, in the space between the floor joists. Then place more supports, lay blanket on them and continue in this way until the job is completed.

Extend insulation upward at each end of joist space to butt snugly against flooring.

Vapor barrier side of blankets *must face up*, toward the flooring above. Shape insulation as necessary to fit around obstructions.

GENERAL INSTRUCTIONS

Vapor Barrier

When installing insulation blankets, the vapor barrier side **MUST ALWAYS FACE THE INTERIOR, LIVING AREA OF THE BUILDING**. The vapor barrier side is the side that has the nailing flanges along its long edges. Printed directions on each blanket plainly identify it.

Vapor barrier should be as continuous as possible. Cut it only when necessary and fit it snugly around all openings. Repair torn or punctured areas with tape or patch with scrap piece of same material. When cutting blanket to fit space that requires a nailing flange, allow enough to permit trimming back wool from the edges that are to form the nailing flange. Simply refold together the cut edges of the cover and nail or staple in place.

Fit Snugly

Insulation should be continuous, without gaps through which heat can escape. All blanket sections should be snugly butted together and tightly fitted around all obstructions and openings such as windows, doors, etc.

Protection of Plumbing

If water pipes are encountered, place the insulation on their cold side only; that is, on the side that faces the exterior of the building. This will prevent freezing in cold weather.

Electrical Lines

If electrical lines obstruct the space to be insulated, the blankets may be split to enclose the cables or conduits with the rock wool. Since the rock wool is fireproof, this provides additional protection from the danger of short circuits.

Spacing Nails or Stapling

Where it is necessary to fasten blanket, nail or staple the vapor barrier flanges at intervals of about 6 inches as marked on the flanges. Stapling is much easier than nailing. Stapler and staples can be obtained from your Gold Bond dealer.

VENTILATION

To help prevent condensation, ventilation should be provided above the insulation installed over top-floor ceiling, and below the insulation installed in floors over crawl spaces or other unexcavated areas.

The vent areas recommended below are for *total* vent area; that is, allowance has been made for the space occupied by screening and louvers in the vent opening.

Recommended Minimum Vent Areas:

ATTICS: 1 sq. ft. of *total* vent area per 100 sq. ft. of top ceiling area measured at the eave line. At least half of vent area should be at highest practicable point of roof. Double the vent area for flat roofs (slope less than 2" in 12").

CRAWL SPACES: 6 sq. ft. of *total* vent area per 100 lineal ft. of enclosing wall, plus 1/300 of the area enclosed by the wall.

These vent areas should be distributed between two or more vents located for maximum cross ventilation. In crawl spaces, it is best to place one near each corner and as high as possible in the wall.

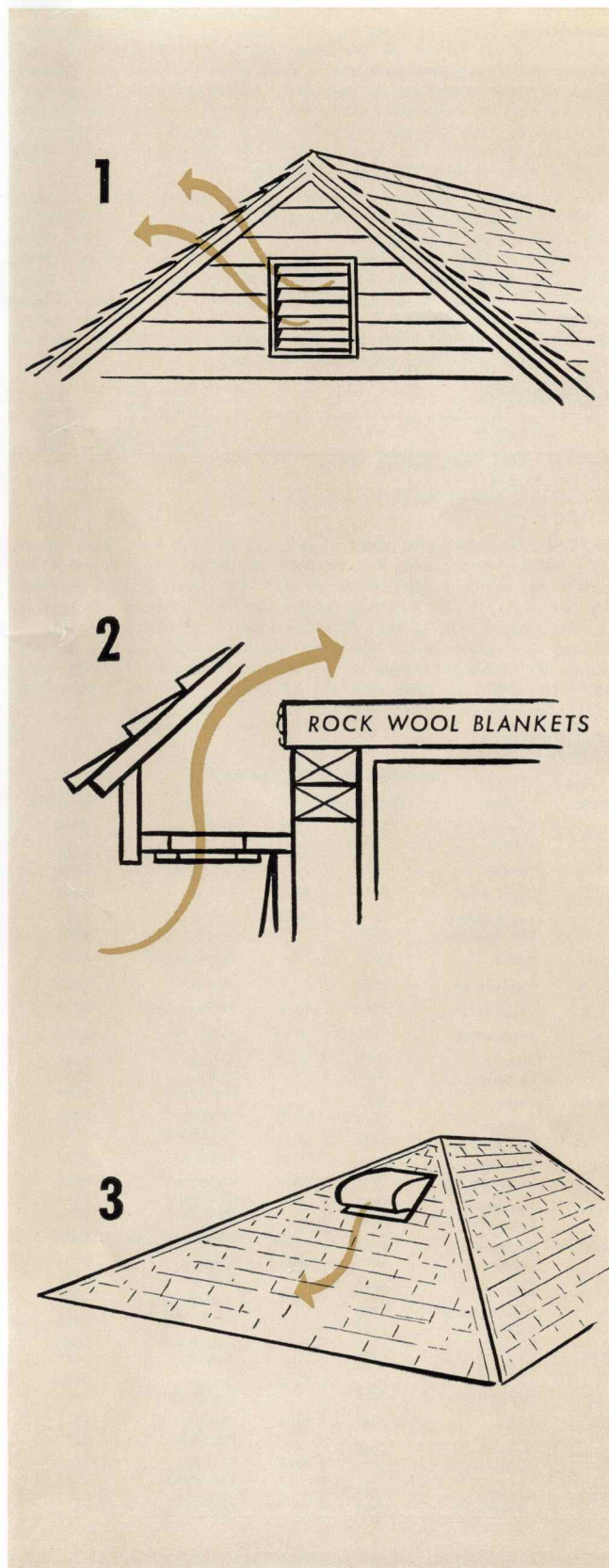
Your Gold Bond Dealer can supply you with the type of ventilator you need for any specific application—weather-protected and screened against insects—together with the manufacturer's data on gross area, net free area and directions for installation.

TYPES OF VENTILATORS

❶ **GABLE VENT:** Designed for use in peak of gable wall. When serving as exhaust vent, it should be located as high as possible. At least two, placed in opposite gable walls for cross ventilation, should be used.

❷ **EAVE VENT:** Placed in underside of eave, it makes a good supplement to the gable or roof vents for maximum cross ventilation. Be sure that the insulation installed between the floor joists or roof rafters does not block free circulation of air between vents.

❸ **HIP ROOF:** A particularly valuable type since ventilation is especially desirable for the low attic headroom under most hip roofs. Works best in combination with eave vent described above and placed high as possible in the roof.



HOW TO COMPUTE FUEL SAVINGS OF ATTIC INSULATION WITH GOLD BOND ROCK WOOL

Under Chart IV at right is a simple formula for quickly figuring the approximate amount of fuel saved with Full-Thick Gold Bond Spun Rock Wool Insulation in your attic. Its basis: Scientific tests made over the years by commonly accepted authorities have established the rate of heat transmission through most forms of building materials. When such materials are combined to form a ceiling or roof, their separate rates of heat transmission can then be combined to determine the amount of heat that will pass through one square foot of the construction in one hour for every degree of temperature difference between the opposite sides of the construction. This rate of heat transmission is called the "U" value.

The U value is stated in British thermal units (Btu) — practically, one unit being the amount of heat required to raise the temperature of 1 lb. of water 1° F. Chart I below gives these U values as they have been established* for top ceiling areas. The last column shows the savings of heat provided by Gold Bond Full-Thick Spun Rock Wool Blanket insulation. These values are for combined roof and ceiling construction when insulation is placed over top floor ceiling, and are savings per square foot of ceiling area—not roof area.

Construction	Heat Flow or U Value*		Heat Saving Coefficient
	Uninsulated	Insulated	
Top Floor Ceiling under Roof as follows:			
Wood Shingle	.29	.08	.21
Asbestos or Asphalt Shingles, Composition, Slate or Tile	.31	.08	.23

To find the minimum total of degrees of heat you must maintain inside your house for comfort, multiply the difference between an inside temperature of 65° and the average outdoor temperature of the heating season, by the number of days in the heating season. Chart II, shown below, gives these totals — known as "degree-days"—for representative cities of the United States as compiled from U. S. Weather Bureau records from 1899 to 1946. If your city is not listed, use the degree-days given for the city nearest you.

CHART II DEGREE-DAYS FOR HEATING					
State	City	Deg.-Days	State	City	Deg.-Days
Ala.	Birmingham	2611	Miss.	Vicksburg	2069
	Mobile	1566	Mo.	Kansas City	4962
Ariz.	Phoenix	1441		St. Louis	4596
Ark.	Little Rock	3009	Mont.	Havre	8416
Cal.	Los Angeles	1391	Nebr.	Lincoln	5980
	San Francisco	3137		Omaha	6095
Colo.	Denver	5839	Nev.	Winnemucca	6357
Conn.	New Haven	5880	N. H.	Concord	7400
D. C.	Washington	4561	N. J.	Atlantic City	5015
Fla.	Jacksonville	1185	N. M.	Santa Fe	6123
Ga.	Atlanta	2985	N. Y.	Albany	6648
	Savannah	1635		Buffalo	6925
				New York	5280
Idaho	Boise	5678	N. C.	Raleigh	3275
Ill.	Chicago	6282		Wilmington	2420
	Springfield	5446	N. D.	Bismark	8937
Ind.	Evansville	4410	Ohio	Cincinnati	4990
	Indianapolis	5458		Cleveland	6144
Iowa	Des Moines	6375		Columbus	5506
	Sioux City	6905	Okla.	Oklahoma City	3670
Kans.	Dodge City	5069	Ore.	Baker	7197
	Topeka	5075		Portland	4353
Ky.	Louisville	4417	Pa.	Philadelphia	4739
La.	New Orleans	1203		Pittsburgh	5430
	Shreveport	2132	S. C.	Charleston	1866
Me.	Eastport	8445		Columbia	2488
	Portland	7377	S. D.	Huron	7940
Md.	Baltimore	4487		Rapid City	7197
Mass.	Boston	5936	Tenn.	Memphis	3090
Mich.	Detroit	6560		Nashville	3613
	Marquette	8745	Texas	El Paso	2532
Minn.	Duluth	9723		Fort Worth	2355
	Minneapolis	7966		Houston	1315
				San Antonio	1435

CHART II — Cont'd.

DEGREE-DAYS FOR HEATING					
State	City	Deg.-Days	State	City	Deg.-Days
Utah	Salt Lake City	5650	W. Va.	Elkins Parkersburg	5800
Vt.	Burlington	8051			4928
Va.	Norfolk	3364	Wisc.	Green Bay	7931
	Richmond	3922		LaCrosse	7421
				Milwaukee	7079
Wash.	Seattle	4815	Wyo.	Cheyenne	7536
	Spokane	6318		Lander	8243

Finally, Chart III gives the amount of heat (Btu) you can secure from the fuel you use, with your heating plant operating at reasonable efficiency.

CHART III**				
Fuel	Unit	Calorific Value, Btu.	Efficiency of Utilization	Net Heating Value, Btu.
Coal	Lb.	12000	55%	6600
Coke	Lb.	12500	55%	6875
Oil	Gal.	137500	70%	96250
Gas (artif.)	Cu. ft.	530	75%	398
Gas (nat.)	Cu. ft.	1000	75%	750

When these three factors are known, you can apply them to the square foot area of the top floor ceiling to be insulated.

EXAMPLE: A house in Buffalo with a wood shingle roof, uses oil for fuel and has a top floor ceiling area of 700 square feet. Then 700 sq. ft. x .21 (the coefficient of heat saved by Full-Thick Gold Bond insulation in 1 hour per sq. ft. from Chart I) x 24 hours in a day x 6925, (the number of degree days in Buffalo's heating season from Chart II) gives a total of 24,431,400 saving in Btu per season.

To reduce this to terms of fuel oil, divide by 96,250, the net Btu heating value per gallon of fuel oil (from "Oil" in Chart III) and the result is 254 gallons of fuel oil saved by attic insulation. At 13½¢ per gallon the savings in dollar value represents \$34.29 per season!

To simplify such calculations, Chart IV has been devised. In it each heat saving coefficient for 1 hour given in Chart I has been multiplied by 24 for daily hours and divided by the number of Btu per unit of fuel.

CHART IV Heat Saving Coefficient With Full-Thick Spun Rock Wool Insulation For:					
Construction Insulated	Coal (ton)	Coke (ton)	Oil (gal.)	Artfcl. Gas (M cu. ft.)	Nat. Gas
.0000 omitted; insert after decimal of value given; thus, .0038 becomes .0000038					
Top Floor Ceiling Under Roof Of:					
Wood Shingle	.0038	.0037	.524	.127	.067
Asbestos or Asphalt Shingles, Composition, Slate or Tile	.0042	.004	.574	.139	.074

Applying the figures of Chart IV to the same oil-heated house in Buffalo with its wood shingle roof, you have: 700 sq. ft. x .0000524 heat saving coefficient x 6925 degree days = 254 gallons of fuel oil saved at 13½¢ per gallon making \$34.29 per year.

A recent study by H. T. Gilkey and D. R. Bahnfleth of the University of Illinois shows equally impressive savings in the cost of air-conditioning through the use of mineral wool insulation. Their calculations were based on a one-story house of 8,146 cu. ft. and ceiling area of 1,040 sq. ft. The results indicate that Full-Thick Gold Bond Twinsulation in the ceiling of such a house reduces by 50% the capacity of the cooling unit required. This means a saving in the original cost of the air conditioning plant and in cost of operation all during its use.

*Based on values given in 1954 edition of "Heating, Ventilating, Airconditioning Guide" published by American Society of Heating and Ventilating Engineers.

**Based on values given in University of Minnesota Bulletin No. 23, "Economics of Insulation", and in various handbooks on fuel.

Gold Bond Rock Wool is one of over 200 related building products made by
NATIONAL GYPSUM COMPANY • BUFFALO, N. Y.